Review

Childbirth and Diagnosis Related Groups (DRGs): patient classification and hospital reimbursement in 11 European countries

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ABSTRACT

Objectives: The study compares how Diagnosis-Related Group (DRG) based hospital payment systems in eleven European countries (Austria, England, Estonia, Finland, France, Germany, Ireland, Netherlands, Poland, Spain, and Sweden) deal with women giving birth in hospitals. It aims to assist gynaecologists and national authorities in optimizing their DRG systems.
Methods: National or regional databases were used to identify childbirth cases. DRG grouping algorithms and indicators of resource consumption were compared for those DRGs which account for at least 1% of all childbirth cases in the respective database. Five standardized case vignettes were defined and quasi prices (i.e. administrative prices or tariffs) of hospital deliveries according to national DRG-based hospital payment systems were ascertained.
Results: European DRG systems classify childbirth cases according to different sets of variables (between one and eight variables) into diverging numbers of DRGs (between three and eight DRGs). The most complex DRG is valued 3.5 times more resource intensive than an index case in Ireland but only 1.1 times more resource intensive than an index case in The Netherlands. Comparisons of quasi prices for the vignettes show that hypothetical payments for the most complex case amount to only €479 in Poland but to €5532 in Ireland.
Conclusions: Differences in the classification of hospital childbirth cases into DRGs raise concerns whether European systems rely on the most appropriate classification variables. Physicians, hospitals and national DRG authorities should consider how other countries' DRG systems classify cases to optimize their system and to ensure fair and appropriate reimbursement.

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[1] On behalf of the EuroDRG Group, http://www.eurodrg.eu/EuroDRG_Group.pdf.

1. Introduction

Diagnosis Related Groups (DRGs) are widely used in Europe for a range of different purposes [1,2]: they form the basis of hospital performance comparisons, they are used to facilitate hospital management and in DRG-based hospital payment systems, and they define reimbursement categories or "hospital products" [3]. DRGs are clinically meaningful groups of patients that have (a) similar clinical characteristics and (b) similar patterns of resource consumption [4]. Even though some systems do not define DRGs in the strict sense of the word (that is groups are not diagnosis related), this article uses the term DRGs to summarize all groups of patients defined by DRG systems or similar grouping algorithm. When DRGs are insufficiently homogenous in terms of resource consumption, performance comparisons do not adequately control for differences between patients within DRGs and, for a large number of patients, hospital reimbursement is either too high or too low. Therefore, classification variables, such as diagnoses, procedures and patient demographics, ideally take the most important determinants of resource consumption (and ultimately costs) into account [5,6].

Childbirth is one of the main causes of hospitalization for women, accounting for about 5% of hospital activity in most OECD countries [7]. Optimal design of DRG systems for childbirth cases is essential in order to assure adequate performance comparisons and fair reimbursement for this very frequent cause of hospitalisation. Comparative analyses of how different countries' DRG systems classify women giving birth can help obstetricians, paediatricians and midwives to scrutinize national standards of classification against European equivalents and to identify potential scope for improvement. Furthermore, analyses of how the services of specialists in treating different women are valued and reimbursed in other DRG systems may inform and substantiate discussions about the adequacy of cost weights (or other indicators of resource consumption). Yet, detailed comparative analyses of grouping algorithms for childbirth are very scarce, suffer from a very limited scope, and have not assessed the classification of patients using routine inpatient data [1]. Therefore, the present study aims to assess the grouping algorithms used in eleven European countries to (1) identify classification variables used to classify hospital childbirth cases into DRGs, (2) compare variations in resource consumption intensity of DRGs within countries, and (3) compare variations in hospital price levels between countries. The results were generated as part of the EuroDRG project, Diagnosis-Related Groups in Europe: Towards Efficiency and Quality, which aimed to examine the ability of European DRG systems to define homogenous groups of patients.

2. Materials and methods

2.1. Definition of episode of care

Similar methods have been reported previously for two other episodes of care, i.e. appendectomy breast cancer [8], Acute myocardial infarction [10], and stroke [11]. In short, as part of the EuroDRG project, researchers from eleven European countries (Austria, England, Estonia, Finland, France, Germany, Ireland, the Netherlands, Poland, Spain and Sweden) agreed upon a common definition for hospital childbirth. The definition was based on the International Classification of Diseases 10th edition (ICD-10) for diagnoses and ICD-9 Clinical Modification (ICD-9CM) for procedures, or equivalent national procedure codes, and is presented in Box 1. Depending on national coding guidelines and practices as well as on national diagnosis and procedure coding systems, large discrepancies exist across countries concerning how "childbirths"

Box 1. Definition of childbirth.

Definition		
Name	Childbirth	
Defined by	Primary or secondary diagnosis or by procedure or by both	
Primary diagnosis (ICD-10)	France	Z37.x
	Estonia	O32, O34, O60, O63, O64, O68 and O80–O84
	Sweden	O80–O84 and Z37
Primary diagnosis national code	Netherlands[a]	V51
Secondary diagnosis (ICD-10)	Germany	Z37.x
Procedure (ICD-9CM, or equivalent in national codes)	Austria[b]	3851, 3852, 3853, 3855, 3856 and 3857
	Ireland[c]	72, 73 and 74
	England[d]	R17–R25
	Spain	72, 73 and 74
	Poland	72, 73 and 74
Primary diagnosis and procedure		
Primary diagnosis	Finland	O60, O63, O68 and O80–O84
Procedure	Finland[e]	MAC, MAD, MAE, MAF, MAG, MAH and MCA

ICD-10: International Classification of Diseases, 10th edition; ICD-9CM: International Classification of Diseases Clinical Modification.
  [a] Diagnosis treatment combination.
  [b] Leistungskatalog.
  [c] ACHI: Australian Classification of Health Interventions.
  [d] OPCS 4.5: Classification of Surgical Operations and Procedures (version 4, 2009–11 (5th revision).
  [e] NCSP: Nomesco Classification of Surgical Procedures.